

Optimizing the Maintenance and Utilization of Educational Play Tools in Early Childhood Education (Study of the Depok, Tangerang, Bogor)

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Abstract

This study aims to evaluate the maintenance and utilization of Educational Game Tools (EGT) in early childhood education institutions located in Depok, Tangerang, and Bogor, Indonesia. Employing a mixed-methods approach, we collected data from 67 early childhood education teachers across 30 institutions through questionnaires, in-depth interviews, observations, and documentation. The quantitative analysis revealed that the average maintenance score of EGT was 76%, categorizing it as "good." Qualitative insights highlighted key maintenance practices, including routine inspections and prompt repairs, which are essential for ensuring the safety and functionality of the equipment. The findings underscore the importance of effective maintenance strategies in enhancing the educational environment and supporting children's holistic development. Recommendations for improving training programs for educators and increasing government support for EGT procurement and maintenance are also discussed.

Keywords: *maintenance; utilization; EGT; Early Childhood Education.*

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Introduction

Early childhood education is an important foundation for child development. One of the key elements in this education is the use of educational game tools (EGT) (Lucas, 2017). Educational game tools not only function as a means of play, but also as a learning tool that can stimulate children's creativity, imagination, and cognitive and motor skills (Fatmawati et al., 2023). Educational game tools (EGT) are tools or media specifically designed for use in children's learning processes, especially at an early age (Hidayat et al., 2023), to develop various aspects of children's development such as cognitive, motoric, social, and emotional (Alotaibi, 2024) (Syafdaningsih et al., 2021). EGT is often designed so that children can learn through play, which is a natural and enjoyable learning method for them (Shree & Shukla, 2016).

Some main characteristics of educational game tools: EGT is designed to attract children's interest so that they feel happy and enthusiastic when playing (Kristiantari, 2021). This is important because children learn more effectively when they are interested and actively

involved in activities(Wardhani & Nduru, 2023). EGT has a clear educational goal. For example, block games can be used to introduce basic mathematical concepts such as EGT, size, and balance(Kurniawan & Ikbal, 2019).

EGT is designed to develop a child's various skills, including cognitive skills (such as problem-solving and logic), motor skills (such as hand-eye coordination and fine motor skills), social skills (such as cooperation and sharing), and emotional skills (such as self-control and empathy)(Elbeltagi et al., 2023). EGT is created keeping in mind the safety and age-appropriate aspects of children. The materials used must be safe and not dangerous, and the design must be appropriate to the child's developmental stage(Brussoni et al., 2012). Many EGTs are designed to stimulate children's creativity and imagination. For example, construction games allow children to build and create various EGTs and structures according to their imagination(Acomi et al., 2023).

Examples of educational play tools include Building Blocks that teach geometric concepts, balance, and fine motor skills. Puzzles that develop problem-solving skills and hand-eye coordination(Rosalianisa et al., 2023). Role Play such as dolls or play kitchen sets helps children develop social skills and imagination(Wirahandayani et al., 2023). Math and Letter Games are like number or letter board games that help children learn to recognize numbers and letters in a fun way(Kermani, 2017).

In the context of early childhood education, EGT is very important because it gives children the opportunity to learn through direct experience and interaction with their environment(Curtis, 2020). By using EGT, educators can create a dynamic and interactive learning environment, which can help children reach their maximum potential in various aspects of development(Pelaez & Monlux, 2020).

Research on the maintenance and use of educational play equipment in early childhood education institutions is a multifaceted field that covers various aspects of child development, pedagogy, and educational practice. Several studies highlight different dimensions relevant to this topic, including those conducted by (Hewes, 2014), emphasizing the importance of spontaneous free play in improving social and emotional health in early childhood education. The experience of uncertainty, unpredictability, and novelty in play contributes to the development of adaptability, control, flexibility, resilience, and balance in children(Navidi, 2018). Samuelsson & Carlsson (2008) highlight the integration of play and learning in early childhood education to foster creativity and promote sustainable pedagogy that aligns with children's natural inclination towards play. They propose a pedagogical approach that utilizes games to improve learning outcomes and creativity in future generations.

Meanwhile, (Senowarsito & Musarokah, 2018) explored the implementation of participation rights in early childhood education through educational games. Their research aims to describe how these tools are used to fulfill participation rights and identify the challenges teachers face in this process. Spencer et al., (2021) discussed the positive impact of including free play in outdoor environments on children's social behavior, creativity, problem-solving skills, self-confidence, and resilience(Spencer et al., 2021). This type of play encourages open exploration and enhances various aspects of a child's development.

While previous research has highlighted the significance of EGTs in promoting child development, there remains a gap in understanding the specific maintenance practices employed by educators in early childhood education institutions. For instance, studies have shown that well-maintained educational tools can enhance children's learning experiences and outcomes(Agustina et al., 2023). However, the relationship between maintenance practices and the overall effectiveness of EGTs in educational settings has not been thoroughly explored.

This study aims to fill this gap by investigating the maintenance and utilization of EGTs in early childhood education institutions in Depok, Tangerang, and Bogor. By employing a mixed-methods approach, this research seeks to provide a comprehensive understanding of current practices and their implications for educational quality. The findings will contribute

to the existing literature by offering practical guidelines for educators and informing policy decisions regarding the support and funding of EGTs in early childhood education.

The problems that will be discussed in the research are (1) How do early childhood teachers in the Depok, Tangerang, and Bogor areas use EGT as a learning medium in early childhood education? (2) What efforts do early childhood teachers make in maintaining EGT equipment in early childhood educational institutions?

Based on the problem studied, the objectives of this research are: (1) Describe the performance of PAUD teachers in the Depok, Tangerang, and Bogor areas using EGT as a learning medium in early childhood education. (2) Describe the efforts made by early childhood education teachers in maintaining EGT equipment in early childhood educational institutions.

The theoretical Benefits of this study are: 1) The research provides a comprehensive framework for understanding the role of educational game tools in early childhood education, emphasizing their importance in cognitive, motor, social, and emotional development. 2) By analyzing the maintenance and utilization of EGT, the study contributes to educational theories related to play-based learning and child development, reinforcing the idea that play is a vital component of effective learning. 3) The use of a mixed methods approach (quantitative and qualitative) enriches the theoretical discourse by demonstrating how different data collection techniques can provide a more holistic view of educational practices.

Practical Benefits of this study are: 1) The findings offer practical guidelines for educators on how to effectively maintain and utilize EGT, which can enhance the learning environment and support children's development. 2) The article suggests the need for improved training programs for educators, which can lead to better maintenance practices and more effective use of EGT in classrooms. 3) The research highlights the importance of government support and funding for the procurement and maintenance of EGT, which can inform policy decisions and resource allocation in early childhood education. 4) The recommendation for developing EGT that is culturally relevant can help educators create more engaging and effective learning experiences tailored to their specific student populations.

Methodology

This research employed a mixed-methods approach, integrating both quantitative and qualitative data collection techniques to provide a comprehensive understanding of the maintenance and utilization of Educational Game Tools (EGTs) in early childhood education institutions (PAUD) in Depok, Tangerang, and Bogor, Indonesia.

The study involved 67 early childhood education teachers from 30 PAUD institutions. The selection of these institutions was based on purposive sampling, which was justified by the need to focus on institutions that actively utilize EGTs in their curriculum. This method allowed for the inclusion of a diverse range of educational settings, ensuring that the findings would be relevant to various contexts within early childhood education.

Data were collected through a combination of questionnaires, in-depth interviews, observations, and documentation. The questionnaires were designed to gather quantitative data regarding the maintenance practices of EGTs, while the interviews provided qualitative insights into the experiences and perceptions of educators regarding EGT utilization.

The qualitative data analysis followed a thematic analysis approach, which involved several key steps. First, the audio recordings of the interviews were transcribed verbatim. Next, the transcripts were read multiple times to gain a thorough understanding of the content. Initial codes were generated based on recurring themes and patterns identified in the data. These codes were then organized into broader themes that reflected the key aspects of educators' experiences with EGT maintenance and utilization.

To ensure the rigor of the analysis, member checking was employed, where participants were invited to review the findings and provide feedback on the accuracy of the themes identified. This process enhanced the credibility of the qualitative data and ensured

that the interpretations accurately represented the participants' perspectives (Creswell & Inoue, 2024).

Quantitative data were analyzed using descriptive percentage methods to summarize the maintenance scores of EGTs. This analysis provided a clear overview of the current state of EGT maintenance across the sampled institutions.

Result and Discussion

Data on the characteristics of respondents in this study are presented as follows:

Table 1. Description of Respondent Data

Respondent Characteristic	Frequency	Percentage
Gender		
Female	67	100
Male	0	0
Education		
Postgraduate (S2)	2	2,98
Graduate (S1)	49	73,13
Diploma	16	23,88

Table 1 shows the characteristics of research respondents, which are dominated by female teachers and school principals. The education level of respondents was mostly undergraduate (73.13%), postgraduate (2.98%), and 23.88% diploma.

Table 2. EGT Maintenance Performance

No	Performance Indicators for Maintenance and Utilization of Educational Game Tools	Score
1	Educational game tools (EGT) in schools are cleaned:	0,7
2	Educational game tools (EGT) are always returned to their place after playing	0,96
3	Educational game tools (EGT) are neatly placed	0,72
4	If the educational game tool (EGE) is damaged it will be repaired	0,93
5	how to maintain educational game tools (EGT)	0,59
6	Does the school have reserves of new educational game tools (EGT) in the warehouse?	0,70
7	Are the educational game tools (EGT) at school sufficient for the number of children in the class?	0,75
8	Do educational game tools (EGT) in schools still use toxic paint which is dangerous for health?	0,50
9	Do the educational game tools (EGT) at school contain sharp/harmful materials?	0,51
10	Are educational game tools (EGT) used by teachers in classroom learning as a learning medium?	0,97
11	Are there sufficient wooden block educational game tools (EGT) available for children to carry out block-arranging activities?	0,85
12	Outdoor educational games (EGT) are available which meet children's needs for playing outside	0,80
13	Role-playing educational game tools (EGT) are available that meet children's playing and learning needs	0,75
14	Cognitive development educational game tools (EGT) are available that meet children's playing and learning needs	0,88
Average		0,76

Table 2 shows the respective scores obtained from the maintenance and storage performance of EGT in early childhood education institutions. The average maintenance score of 76% categorizes the maintenance practices of EGTs as "good." Notably, the highest scores were observed in the areas of returning tools to their designated places (96%) and repairing

damaged tools (93%). However, the lowest scores were related to the cleaning of EGTs (70%) and the presence of toxic materials (50%)

Discussion

Maintenance of educational game equipment

Based on the results of interviews with early childhood education teachers in the Depok, Tangerang, and Bogor areas, information was obtained that teachers' efforts in maintaining EGT in Early Childhood Education Institutions involve several important aspects: 1) Routine Inspection: The EGT is checked regularly to ensure that the device is in good condition and safe for use by children. The inspection includes cleanliness, physical damage, and equipment functionality (Neil-Sztramko et al., 2021). 2) Repair and Replacement: Damaged EGTs are immediately repaired or replaced. This is important to prevent injuries and ensure the continuity of teaching and learning activities (Hidayat et al., 2023). 3) Proper Storage: Educational Game Tools are stored in a safe and orderly location to avoid damage due to accumulation or exposure to inappropriate environments (Marwany et al., 2023).

Utilization of Educational Game Tools

EGT is utilized optimally in learning activities in early childhood education: 1) Integration in the Curriculum: EGT is used as part of the daily learning plan. Educators design activities that utilize EGT to achieve certain learning goals, such as recognizing colors, EGTs, numbers, and letters (Kelly, 2015). 2) Game-Based Activities: Game-based learning helps children learn in a fun and engaging way. For example, block games can be used to teach basic math and science concepts. 3) Social and Emotional Skills Development: EGT designed for group play helps children learn to cooperate, share, and manage their emotions (Lamrani & Abdelwahed, 2020). 4) Adaptation to Individual Needs: Educators adapt the use of EGT according to the needs and abilities of each child, including children with special needs (Purnamasari et al., 2023).

This is to the results of research conducted by (Irviana, 2020) which states that integrating educational game tools, improves the quality of education for students by increasing motivation, facilitating the acquisition of necessary skills, encouraging investigation and exploration, and preparing individuals to face the important role of technology in life.

The research results of the article on the maintenance and use of educational game tools (EGT) in Early Childhood Education Institutions are supported by several educational theories, including: 1) Constructivist Theory: Constructivist theory, particularly as articulated by theorists like Jean Piaget and Lev Vygotsky, posits that children learn best through active engagement and interaction with their environment. The use of EGT aligns with constructivist principles by allowing children to learn through play, exploration, and hands-on experiences. The article emphasizes that EGT facilitates cognitive, social, and emotional development, which is central to constructivist learning. 2) Play-Based Learning Theory: This theory emphasizes the importance of play as a fundamental aspect of learning in early childhood. It suggests that play is not just a leisure activity but a critical component of children's development and learning processes. This research highlights how EGT can be integrated into the curriculum to promote learning objectives, such as recognizing colors, numbers, and letters, thereby reinforcing the idea that play-based activities are essential for effective learning in early childhood education. 3) Social Learning Theory: Proposed by Albert Bandura, social learning theory emphasizes the role of observation, imitation, and modeling in learning. It suggests that children learn behaviors and skills through social interactions. The research discusses how EGT designed for group play helps children develop social skills, cooperation, and emotional management, which are key components of social learning theory. 4) Developmentally Appropriate Practice (DAP): DAP is a framework that emphasizes teaching practices that are suitable for the age, individual needs, and developmental stage of children.

It advocates for the use of engaging and meaningful activities that promote learning. The findings of the research support DAP by demonstrating that EGT can be tailored to meet the diverse needs of children, including those with special needs, thereby fostering an inclusive and effective learning environment.

The information obtained through this research is very useful for the academic profession, namely:

Academic professionals can use the findings to inform the design of curricula that integrate EGT effectively, ensuring that educational games are aligned with developmental goals and learning outcomes. The study opens avenues for further research on the impact of EGT on various aspects of child development, encouraging academic professionals to explore innovative educational practices and their effectiveness. The need for training programs highlighted in the article suggests that academic professionals should focus on developing workshops and courses that equip educators with the skills to maintain and utilize EGT effectively.

For Early Childhood Education Institutions: Institutions can implement structured maintenance protocols for EGT, including regular inspections, repairs, and proper storage, to ensure the safety and longevity of educational tools. The findings emphasize the importance of adequate funding and resources for the procurement and maintenance of EGT, prompting institutions to advocate for financial support from government and community sources. Educators can develop strategies that incorporate EGT into daily learning activities, fostering a more engaging and interactive learning environment that supports children's holistic development. Institutions can involve parents and the community in the development and maintenance of EGT, creating a collaborative approach that enhances the educational experience for children.

By addressing these practical implications, academic professionals and early childhood education institutions can enhance the effectiveness of educational practices, ultimately leading to improved outcomes for children in early childhood settings. The integration of well-maintained and thoughtfully utilized EGT can create a dynamic learning environment that supports various aspects of child development.

The findings of this study align with existing theories on play-based learning, which emphasize the importance of well-maintained educational tools in fostering effective learning environments. According to Piaget's theory of cognitive development, children learn best through active engagement with their environment, which includes the use of EGTs. The high scores in returning tools and repairing damaged equipment suggest that educators recognize the importance of maintaining a safe and organized learning environment, which is crucial for facilitating children's exploration and learning.

However, the lower scores in cleaning practices and the presence of potentially harmful materials indicate areas for improvement. These findings resonate with Vygotsky's social development theory, which posits that the learning environment significantly influences children's development. Ensuring that EGTs are clean and safe is essential for promoting positive learning experiences and preventing health risks (Grimberg, 2022).

The practical implications of these findings are significant. Educators should prioritize regular cleaning and safety checks of EGTs to enhance their effectiveness in supporting children's development (Badu et al., 2024). Additionally, training programs for educators should emphasize the importance of maintenance practices and provide strategies for ensuring the safety and cleanliness of educational tools.

Furthermore, the study highlights the need for increased government support and funding for the procurement and maintenance of EGTs. By investing in high-quality educational tools and ensuring their proper maintenance, educational institutions can create enriching environments that foster holistic child development (Apriyansyah et al., 2024).

Conclusion

The maintenance and effective use of Educational Game Tools (EGTs) in early childhood education are crucial for supporting children's holistic development. This research concludes that the level of maintenance of EGTs in early childhood education institutions in the Depok, Tangerang, and Bogor areas is categorized as "good," with an average maintenance score of 76%. Key practices identified include routine inspections, timely repairs, and proper storage of EGTs. However, areas requiring improvement were also noted, particularly in the cleaning of EGTs and ensuring the absence of toxic materials.

The findings of this study have significant implications for early childhood education. First, it is essential for educators to recognize that the quality of EGT maintenance directly impacts children's learning experiences. A well-maintained environment not only promotes safety but also enhances children's engagement and exploration, which are vital for cognitive and social development.

Recommendations for Educators and Policymakers: Educators should receive targeted training that focuses on specific aspects of EGT maintenance, including: a) Best practices for cleaning and sanitizing educational tools to ensure a safe learning environment, b) Strategies for identifying and addressing potential hazards associated with EGTs, such as toxic materials or sharp edges, and c) Techniques for conducting regular inspections and documenting the condition of EGTs to facilitate timely repairs and replacements.

Institutions should establish clear maintenance protocols that outline the responsibilities of educators regarding EGT upkeep. This could include checklists for daily, weekly, and monthly maintenance tasks to ensure consistency and accountability. Policymakers should prioritize funding for the procurement and maintenance of high-quality EGTs in early childhood education settings. This support can help institutions acquire safe and effective educational tools, thereby enhancing the overall learning environment. Encourage collaboration between educational institutions and local communities to promote awareness of the importance of EGT maintenance. Community workshops could be organized to educate parents and caregivers about the role of EGTs in child development and how they can support maintenance efforts at home.

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